

CLAIMS

Substant

1. A buffer structure for storing symbols received via a plurality of
2 channels, wherein each channel is associated with a particular time interval
4 over which the received symbols are subsequently processed, the buffer
structure comprising:

6 a buffer partitioned into a plurality of sections, wherein one section is
assigned to each channel and dimensioned to store symbols expected to be
received over the associated time interval; and
8 an address generator coupled to the buffer and operative to provide
addresses for writing symbols to the assigned sections.

2. The buffer structure of claim 1, wherein each section is operated as a
2 circular buffer.

2. The buffer structure of claim 1, wherein each channel corresponds to a
2 physical channel defined by W-CDMA standard.

4. A buffer structure for storing symbols received via a plurality of
2 channels, wherein each channel is associated with a particular time interval
4 over which the received symbols are subsequently processed, the buffer
structure comprising:

6 a buffer partitioned into a plurality of sections, one section for each
channel, wherein the plurality of sections are assigned to the plurality of
channels based on the associated time intervals; and
8 an address generator coupled to the buffer and operative to provide
addresses for writing symbols to the assigned sections.

2. The buffer structure of claim 4, wherein each channel corresponds to a
2 transport channel defined by W-CDMA standard.

2. The buffer structure of claim 5, wherein the time interval associated
with each channel corresponds to a transmission time interval (TTI) defined by
the W-CDMA standard.

2. The buffer structure of claim 4, wherein the time interval associated
with each channel is selected from a group consisting of 10 msec, 20 msec, 40
msec, and 80 msec.

8. The buffer structure of claim 4, wherein the plurality of sections are
2 assigned to the plurality of channels in descending order of the associated time
intervals.

9. The buffer structure of claim 4, wherein the buffer is partitioned and
2 assigned prior to the start of each shortest time interval.

10. The buffer structure of claim 4, wherein the buffer is partitioned
2 starting from an initial location and continuing along a first direction of the
buffer.

11. The buffer structure of claim 10, wherein each section is defined
2 starting from the initial location or the end of a previous section.

12. The buffer structure of claim 4, wherein each section is sized to store
2 all symbols expected to be received within the time interval associated with the
channel to which the section is assigned.

13. The buffer structure of claim 4, wherein the plurality of channels
2 include a first group of one or more channels and a second group of one or
4 more channels, wherein one or more sections assigned to the one or more
channels in the first group are defined starting from a first initial location and
6 continuing along a first direction of the buffer, and wherein one or more
8 sections assigned to the one or more channels in the second group are defined
starting from a second initial location and continuing along a second direction
of the buffer.

14. The buffer structure of claim 13, wherein the first and second initial
2 locations are selected as a common location, and wherein the first and second
directions are opposite directions.

15. The buffer structure of claim 4, wherein the address generator is
2 operative to maintain a write pointer for each assigned section.

16. The buffer structure of claim 15, wherein the address generator is
2 further operative to maintain a start location for each assigned section.

17. A buffer structure for storing symbols received via a plurality of
2 transport channels, wherein each transport channel is associated with a
4 particular transmission time interval (TTI), the buffer structure comprising:
6 a buffer partitioned into a plurality of sections, one section for each
8 transport channel, wherein the plurality of sections are defined starting from an
10 initial location and continuing along a first direction of the buffer, and wherein
the plurality of sections are assigned to the plurality of transport channels in
descending order of the associated TTIs; and
12 an address generator coupled to the buffer and operative to provide
addresses for writing symbols to the assigned sections.

18. A receiver unit operative to process symbols received via a plurality
2 of channels in a communication system, wherein each channel is associated
4 with a particular time interval over which the received symbols are
subsequently processed, the receiver unit comprising:
6 a channel processor operative to process samples received for the
plurality of channels to provide symbols;
8 a buffer coupled to the channel processor and operative to store the
symbols from the channel processor, wherein the buffer is partitioned into a
10 plurality of sections, one section for each channel, and wherein the plurality of
sections are assigned to the plurality of channels based on the associated time
intervals; and
12 a data processor coupled to the buffer and operative to retrieve symbols
for a particular traffic from an assigned section of the buffer and to process the
14 retrieved symbols.

19. The receiver unit of claim 18, wherein each channel corresponds to a
2 transport channel defined by W-CDMA standard, and wherein the time
4 interval associated with each channel corresponds to a transmission time
interval (TTI) also defined by the W-CDMA standard.

20. The receiver unit of claim 18, wherein the buffer is partitioned
2 starting from an initial location and continuing along a first direction of the
4 buffer.

21. The receiver unit of claim 18, wherein the plurality of channels
2 includes a first group of one or more channels and a second group of one or
4 more channels, wherein one or more sections assigned to the one or more
channels in the first group are defined starting from a first initial location and

continuing along a first direction of the buffer, and wherein one or more
6 sections assigned to the one or more channels in the second group are defined
starting from a second initial location and continuing along a second direction
8 of the buffer.

22. The receiver unit of claim 18, wherein the symbols from the channel
2 processor are stored to permuted locations in the buffer to achieve a second
de-interleaving.

23. The receiver unit of claim 18, wherein symbols for a particular traffic
2 are retrieved from permuted locations in the assigned section to achieve a
first de-interleaving.

24. The receiver unit of claim 18, further comprising:
2 an address generator coupled to the buffer and operative to provide
addresses for writing symbols to the plurality of sections.

25. The receiver unit of claim 18, further comprising:
2 a controller coupled to the channel processor and the data processor, the
controller operative to direct writing of symbols to the plurality of sections and
4 reading of symbols from the plurality of sections.

26. The receiver unit of claim 18, further comprising:
2 a decoder coupled to the data processor and operative to receive and
decode symbols processed by the data processor.

27. A receiver unit comprising the channel processor, buffer, and data
2 processor of claim 18, and further operative to process a downlink data
transmission in accordance with W-CDMA standard.

28. A receiver unit comprising the channel processor, buffer, and data
2 processor of claim 18, and further operative to process an uplink data
transmission in accordance with W-CDMA standard.

29. A method for storing symbols received via a plurality of channels,
2 wherein each channel is associated with a particular time interval over which
the received symbols are subsequently processed, the method comprising:
4 identifying the plurality of channels to be received and processed;
determining a time interval associated with each channel;

6 assigning a plurality of sections of a buffer to the plurality of channels in
accordance with the associated time intervals; and
8 storing symbols received from the plurality of channels to the plurality
of assigned sections.

30. The method of claim 29, wherein each channel corresponds to a
2 transport channel defined by W-CDMA standard, and wherein the time
interval associated with each channel corresponds to a transmission time
4 interval (TTI) also defined by the W-CDMA standard.

31. The method of claim 29, wherein the assigning includes
2 ranking the plurality of channels according to the associated time
intervals,
4 selecting a channel associated with a longest time interval and not yet
assigned a section of the buffer,
6 allocating a next available section of the buffer to the selected channel,
wherein the next available section is defined from a start location or an end of a
8 preceding allocated section, and
repeating the selecting and allocating for the plurality of channels.

32. The method of claim 31, wherein the assigning further includes
2 determining the size of a traffic to be received on the selected channel,
and
4 wherein the next available section allocated to the selected channel is
defined based on the determined traffic size.

33. The method of claim 29, wherein the plurality of sections are defined
2 starting from an initial location and continuing along a first direction of the
buffer.

34. The method of claim 29, further comprising:
2 grouping the plurality of channels into a first group of one or more
channels and a second group of one or more channels, and
4 wherein the assigning includes
6 first assigning one or more sections defined along a first direction
of the buffer to the one or more channels in the first group in accordance
with the associated time intervals, and

8 second assigning one or more sections defined along a second
direction of the buffer to the one or more channels in the second group
10 in accordance with the associated time intervals.

35. The method of claim 34, wherein the first and second groups of one
2 or more channels are associated with first second coded composite transport
channels (CCTrCHs), respectively, defined by W-CDMA standard.